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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/517,049

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Yasushi Kurata

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38834

7590

11/24/2009

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EXAMINER

VINH, LAN

ART UNIT

PAPER NUMBER

1792

NOTIFICATION DATE

DELIVERY MODE

11/24/2009

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentmail@whda.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/517,049	<b>Applicant(s)</b> KURATA ET AL.	
	<b>Examiner</b> LAN VINH	<b>Art Unit</b> 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 03 August 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 and 19-22 is/are rejected.
- 7) ☒ Claim(s) 12-18 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>103009</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's request for reconsideration of the finality of the restriction requirement of the last Office action is persuasive and, therefore, the finality of that restriction requirement ( mailing dates 04/09/2008) is withdrawn.

Claims 12-18, directed to the process of making or using a composition/product, previously withdrawn from consideration as a result of a restriction requirement hereby rejoined and fully examined for patentability under 37 CFR 1.104.

Because all claims previously withdrawn from consideration under 37 CFR 1.142 have been rejoined, **the restriction requirement as set forth in the Office action mailed on 04/09/2008 is hereby withdrawn.** In view of the withdrawal of the restriction requirement as to the rejoined inventions, applicant(s) are advised that if any claim presented in a continuation or divisional application is anticipated by, or includes all the limitations of, a claim that is allowable in the present application, such claim may be subject to provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application. Once the restriction requirement is withdrawn, the provisions of 35 U.S.C. 121 are no longer applicable. See *In re Ziegler*, 443 F.2d 1211, 1215, 170 USPQ 129, 131-32 (CCPA 1971). See also MPEP § 804.01.

### ***Response to Arguments***

2. Applicant's arguments, with respect to the rejection(s) of claims 1-11 under 35 U.S.C. 102(e) as allegedly being anticipated by Kurata et al. (US2008/0003924) have

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been fully considered and are persuasive. The rejection(s) based on Kurata has been withdrawn.

Applicant's arguments, with respect to the rejection(s) of claims 5, 10-11 under 35 U.S.C. 103(a) as allegedly being unpatentable over Yoneda et al. (US2007/00045233) have been fully considered and are persuasive. The rejection(s) has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Yoneda et al (US 7,118,685)

Applicant's arguments with respect to the rejection of claims 1-4, 6-9 under 35 U.S.C 103(a) as being unpatentable over Yoneda et al (US 2007/0045233) have been considered but are moot in view of the new ground(s) of rejection of claims 1-11, 19-22 based on newly cited references Yoneda et al (7,118,685), Costa et al (US 2002/0189169), Bian et al (US 2004/0023492) and Hirabayashi et al (US 6,426,294).

The new ground(s) of rejection(s) follow

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-5, 6-11, 19 are rejected under 35 U.S.C. 102(e) as being anticipated by Yoneda et al (US 7,118,685)

Yoneda discloses a polishing composition comprises: hydrogen peroxide <sup>claim 6/</sup> claimed a metal-oxidizing agent; BTA <sup>claim 5/</sup> a metal anticorrosive agent; gluconic acid/an acid in which the negative value of the logarithm of the dissociation constant Ka (pKa) of a first dissociable acid group is more than 3.5 / an organic acid <sup>claim 3/</sup> claimed an oxidized metal dissolving agent; and water ( col 6, lines 25-40; col 19, lines 15-20, table 2 (I-4), the pH of the polishing slurry is 3 ( col 5, lines 40-45), which overlaps one end of the claimed range of 3-4, and the concentration of the organic acid/the metal-oxidizing agent is 0.1-10 wt % ( col 6, lines 45-50), which overlaps the claimed range of 0.01 to 3 wt % <sup>claim 19/</sup> 0.01-1.5 wt% <sup>claim 2</sup>, the composition also comprises colloidal silica <sup>claims 7-8</sup> particle/polishing particles having a primary average particle size/average particle diameter of 50-100 nm/ 100 nm or less <sup>claim 9</sup> (col 15, lines 7-25), polycarboxylic acid/polyacrylic acid <sup>claims 10-11</sup>/water-soluble polymer polymer (col 8, lines 5-15)

It is noted that claim 1, 19 drawn to a composition. Thus, the claim recitations of " is capable of polishing a barrier layer/ is capable of polishing a barrier layer wherein the barrier layer is selected from the group consisting of tantalum compounds and titanium compound" are considered as intended use of the claimed composition/function of the claimed composition and composition claim covers what the composition is not what the composition does and "Likewise the intended use of composition is not patentably significant. In re Albertson 141 USPQ 730 (CCPA 1964); In re Heck 114 USPQ 161 (CCPA 1957)". "[T]he discovery of a previously unappreciated property of a prior art

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composition, or of a scientific explanation for the prior art's functioning, does not render the old composition patentably new to the discoverer." *Atlas Powder Co. v. Ireco Inc.*, 190 F.3d 1342, 1347, 51 USPQ2d 1943, 1947 (Fed. Cir. 1999 ). Furthermore, since the prior art has same composition as claimed invention, the composition of the prior art is capable of performing same polishing function as instantly claimed.

4. Claims 20-22 are rejected under 35 U.S.C. 102(e) as being anticipated by Yoneda et al (US 7,118,685)

Yoneda discloses a polishing composition comprises: hydrogen peroxide / claimed a metal-oxidizing agent; BTA /a metal anticorrosive agent; gluconic acid/an acid in which the negative value of the logarithm of the dissociation constant  $K_a$  ( $pK_a$ ) of a first dissociable acid group is more than 3.5 / an organic acid/ claimed an oxidized metal dissolving agent; and water ( col 6, lines 25-40; col 19, lines 15-20, table 2 (I-4), the pH of the polishing slurry is 3 ( col 5, lines 40-45), which overlaps one end of the claimed range of 3-4/3-3.75, and the concentration of the organic acid/the metal-oxidizing agent is 0.1-10 wt % ( col 6, lines 45-50), which overlaps the claimed range of 0.01 to 3 wt %, , the composition also comprises colloidal silica particle/polishing particles having a primary average particle size/average particle diameter of 50-100 nm/ 100 nm or less claim <sup>21</sup>(col 15, lines 7-25).

It is noted that claims 20, 21-22 drawn to a composition. Thus, the claim recitations of " is capable of polishing a barrier layer/ is capable of polishing a barrier layer wherein the barrier layer is selected from the group consisting of tantalum, tantalum nitrides...

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and titanium alloys" are considered as intended use of the claimed composition/function of the claimed composition and composition claim covers what the composition is not what the composition does and "Likewise the intended use of composition is not patentably significant. In re Albertson 141 USPQ 730 (CCPA 1964); In re Heck 114 USPQ 161 (CCPA 1957)". "[T]he discovery of a previously unappreciated property of a prior art composition, or of a scientific explanation for the prior art's functioning, does not render the old composition patentably new to the discoverer." Atlas Powder Co. v. Ireco Inc., 190 F.3d 1342, 1347, 51 USPQ2d 1943, 1947 (Fed. Cir. 1999 ). Furthermore, since the prior art has same composition as claimed invention, the composition of the prior art is capable of performing same polishing function as instantly claimed.

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-8, 10-11,19, 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Costas et al (US 2002/0189169) in view of Hirabayashi et al (US 6,426,294)

Costa discloses a polishing composition comprises: hydrogen peroxide / claimed a metal-oxidizing agent; tolyltriazole /a metal anticorrosive agent; complexing agent includes organic acids such as : lactic acid, malic acid , gluconic acid (page 2,

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paragraphs 0026, 0027, 0028), the pH of the polishing slurry is 2.8-3.8 ( page 2, paragraph 0025), which overlaps one end of the claimed range of 3-4/3-3.75, and the concentration of the organic acid is 0.1-1.0 wt % ( page 2, paragraph 0027), which overlaps the claimed range of 0.01 to 3 wt %, , the composition also comprises silica particle/polishing particles (page 2, paragraph 0031), polymethacrylic acid<sup>claims 10-11</sup>/water-soluble polymer polymer ( page 3, paragraph 0042)

It is noted that claim 1, 19, 20 drawn to a composition. Thus, the claim recitations of " is capable of polishing a barrier layer/ is capable of polishing a barrier layer wherein the barrier layer is selected from the group consisting of tantalum compounds and titanium compound" are considered as intended use of the claimed composition/function of the claimed composition and composition claim covers what the composition is not what the composition does and "Likewise the intended use of composition is not patentably significant. In re Albertson 141 USPQ 730 (CCPA 1964); In re Heck 114 USPQ 161 (CCPA 1957)". "[T]he discovery of a previously unappreciated property of a prior art composition, or of a scientific explanation for the prior art's functioning, does not render the old composition patentably new to the discoverer." Atlas Powder Co. v. Ireco Inc., 190 F.3d 1342, 1347, 51 USPQ2d 1943, 1947 (Fed. Cir. 1999 ).

Unlike the instant claimed inventions as per claims 1, 19, 20, Costa fails to specifically disclose the limitation of wherein the oxidized metal dissolving agent is an acid in which the negative value of the logarithm of the dissociation constant  $K_a$  ( $pK_a$ ) of a first dissociable acid group is 3.5 or more



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Hirabayashi discloses a polishing composition comprises hydrogen peroxide, lactic acid/ an acid in which the negative value of the logarithm of the dissociation constant Ka (pKa) of a first dissociable acid group is more than 3.5 (col 28, Table 1)

Thus, one skilled in the art at the time the invention was made , having Costa as a reference, would have found it obvious to modify Costa's metal polishing composition by selecting lactic acid/ an acid in which the negative value of the logarithm of the dissociation constant Ka (pKa) of a first dissociable acid group is more than 3.5 as a complexing agent/ metal dissolving agent in view of Hirabayashi teaching since Hirabayashi discloses that the use of lactic acid in the polishing solution increases the metal polishing rate of the polishing composition (table 1)

6. Claims 1-11, 19, 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bian et al (US 2004/0023492) in view of Hirabayashi et al (US 6,426,294 118,685)

Bian discloses a polishing composition comprises: hydrogen peroxide <sup>claim 6</sup>/ claimed a metal-oxidizing agent; totytriazole <sup>claim 5</sup>/a metal anticorrosive agent; complexing agent includes organic acids such as : acetic acid, lactic acid, malic acid , gluconic acid (page and water, the pH of the polishing slurry is 2-3.5 ( page 2, paragraphs 0013, 0014, 0015), which overlaps one end of the claimed range of 3-4/3-3.75, and the concentration of the organic acid/the metal-oxidizing agent is 0-20 wt % ( page 2, paragraph 0015), which encompasses the claimed range of 0.01 to 3 wt % <sup>claim 19</sup>/ 0.01-1.5 wt% <sup>claim 2</sup>, the composition also comprises silica <sup>claims 7-8</sup> particle/polishing particles

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having a primary average particle size/average particle diameter of less than 100 nm

claims<sup>9, 21</sup> ( page 2, paragraph 0016), aqueous polymer such as polyacrylic acid<sup>claims 10-</sup>

<sup>11</sup>/water-soluble polymer polymer ( page 3, paragraph 0020)

It is noted that claim 1, 19, 20-22 drawn to a composition. Thus, the claim recitations of " is capable of polishing a barrier layer/ is capable of polishing a barrier layer wherein the barrier layer is selected from the group consisting of tantalum compounds and titanium compound/ is capable of polishing a barrier layer wherein the barrier layer is selected from the group consisting of tantalum, tantalum nitrides... and titanium alloys" are considered as intended use of the claimed composition/function of the claimed composition and composition claim covers what the composition is not what the composition does and "Likewise the intended use of composition is not patentably significant. In re Albertson 141 USPQ 730 (CCPA 1964); In re Heck 114 USPQ 161 (CCPA 1957)". "[T]he discovery of a previously unappreciated property of a prior art composition, or of a scientific explanation for the prior art's functioning, does not render the old composition patentably new to the discoverer." Atlas Powder Co. v. Ireco Inc., 190 F.3d 1342, 1347, 51 USPQ2d 1943, 1947 (Fed. Cir. 1999 ).

Unlike the instant claimed inventions as per claims 1, 19, 20, 21, Costa fails to specifically disclose the limitation of wherein the oxidized metal dissolving agent is an acid in which the negative value of the logarithm of the dissociation constant  $K_a$  (pKa) of a first dissociable acid group is 3.5 or more

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Hirabayashi discloses a polishing composition comprises hydrogen peroxide, lactic acid/ an acid in which the negative value of the logarithm of the dissociation constant  $K_a$  ( $pK_a$ ) of a first dissociable acid group is more than 3.5 (col 28, Table 1)

Thus, one skilled in the art at the time the invention was made , having Bian as a reference, would have found it obvious to modify Bian's metal polishing composition by selecting lactic acid/ an acid in which the negative value of the logarithm of the dissociation constant  $K_a$  ( $pK_a$ ) of a first dissociable acid group is more than 3.5 as a complexing agent/ metal dissolving agent in view of Hirabayashi teaching since Hirabayashi discloses that the use of lactic acid in the polishing solution increases the metal polishing rate of the polishing composition (table 1)

### ***Allowable Subject Matter***

7. Claims 12-18 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: Regarding claim 12, the cited prior art of record fails to disclose a polishing method comprises a step of second chemically polishing and mechanically polishing at least the exposed projected portions of said barrier conductor layer and the conductive substance layer while supplying the polishing slurry of claim 1 to expose the interlaminar insulating film at locations corresponding to the projected portions of said interlaminar insulating film, with conductive substance layer at the dented portions of

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said barrier conductor layer remaining, in combination with the rest of the steps of claim

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### ***Conclusion***

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAN VINH whose telephone number is (571)272-1471.

The examiner can normally be reached on M-F 8:30-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571 272 1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Lan Vinh/  
Primary Examiner, Art Unit 1792

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